

# PIN85 DEVELOPMENT OF A NEW PATIENT REPORTED OUTCOME (PRO) MEASURE FOR COMMUNITY-ACQUIRED BACTERIAL PNEUMONIA (CABP)

Howard K<sup>1</sup>, Portalupi S<sup>1</sup>, Hoffmann S<sup>2</sup>, Crawley JA<sup>3</sup>, Lorens L<sup>4</sup>, Cimms TA<sup>3</sup>, Powers JH<sup>5</sup>, FNIH Biomarkers Consortium CABP ABSSSI Project Team<sup>6</sup>

<sup>1</sup>Oxford Outcomes, an ICON plc company, San Francisco, CA, USA, <sup>2</sup>Foundation for the National Institutes of Health, Bethesda, MD, USA, <sup>3</sup>AstraZeneca, Gaithersburg, MD, USA, <sup>4</sup>Cerexa, Inc, Oakland, CA, <sup>5</sup>National Institute of Allergy and Infectious Diseases (NIAID) National Institutes of Health (NIH), Bethesda, MD, USA, <sup>6</sup>Bethesda, MD, USA

**OBJECTIVES:** We describe the process and progress of the Foundation for the NIH Biomarkers Consortium Project Team, a public-private partnership of government, academia, non-profit, and industry. The goal is development and qualification of a new community-acquired bacterial pneumonia (CABP) patient reported outcome (PRO) instrument incorporating reliable, well-defined, and relevant endpoints for patients in terms of how they feel and function in clinical trials of antibacterial drugs for CABP. **METHODS:** We adhered to the FDA PRO Guidance for instrument development and the 2010 FDA qualification process for drug development tools (DDTs). This guidance describes the process for DDTs intended for use in multiple drug development programs, the goal of the current effort. Once qualified, drug developers can use DDTs for the qualified context in Investigational New Drug (IND) and New Drug Application (NDA)/Biological License Application (BLA) submissions without FDA reconsideration of the DDTs' suitability. **RESULTS:** The initial phase of instrument development included a literature review, a gap analysis, and interviews with six clinical experts. The most commonly reported symptoms identified by the literature review were cough, chest pain, dyspnea, sputum production, and fatigue. These findings were used to inform the development of a study protocol and interview guide to elicit concepts from CABP patients. Following qualitative analysis of the interview transcripts, the team will draft a PRO instrument based on key concepts identified from CABP patients and experts. The draft PRO will be evaluated by an expert panel and refined through cognitive debriefing interviews with patients. **CONCLUSIONS:** A consortium-based approach will be useful and efficient in developing a new draft PRO measure for CABP, which incorporates published literature and data from qualitative interviews. The team is currently using a similar approach for development of a draft PRO for acute bacterial skin and skin structure infections (ABSSSI).

# PIN86 DETERMINANTS OF QUALITY OF LIFE IN NEWLY DIAGNOSED HIV INFECTED PATIENTS IN KENYA

Patel A<sup>1</sup>, van der Kop M<sup>2</sup>, Marra C<sup>3</sup>, Ojaka D<sup>4</sup>, Igunza P<sup>4</sup>, Lester R<sup>1</sup>

<sup>1</sup>University of British Columbia, Vancouver, BC, Canada, <sup>2</sup>Karolinska Institutet, Solna, Sweden,

<sup>3</sup>University of British Columbia, Vancouver, BC, Canada, <sup>4</sup>African Medical and Research Foundation, Nairobi, Kenya

**OBJECTIVES:** Quality of life in HIV infected patients can be determined by a number of factors including severity of disease, social support and coping mechanisms. Common symptoms of HIV can be a key determinant of quality of life. The objective of this study was to examine the influence of symptoms associated with HIV disease on physical and mental of HIV infected patients in Kenya. **METHODS:** A Kiswahili translated SF-12 survey was administered to newly diagnosed HIV infected patients participating in a randomized, controlled trial in Nairobi, Kenya between April and October 2013. Patients were also asked if they were experiencing common symptoms of HIV (i.e. fatigue, loss of appetite, depression or diarrhea) on a scale including no symptoms, mild, moderate or severe symptoms. SF-12 survey responses were scored to derive a physical component score (PCS) and mental component score (MCS). Linear regression was used to determine which symptoms were significantly associated with each score. **RESULTS:** 135 respondents were included in the analysis with 7 observations removed due to missing data. Severe fatigue was associated with 15 point (p<0.01) reduction in PCS while severe lack of appetite was associated with an 8.6 point (p<0.01) reduction in PCS compared patients not experiencing these symptoms. Those experiencing severe depression had 12.2 point (p<0.01) lower MCS and those experiencing severe anxiety had 8.4 point (p<0.01) lower MCS compared to those not experiencing these symptoms. **CONCLUSIONS:** This study is the first to examine which symptoms are associated with lower quality of life outcomes in a cohort of HIV infected patients in Kenya. The drivers of lower physical and mental may be valuable to inform clinical management and program planning efforts in HIV treatment and care.

# PIN87 SOCIO-DEMOGRAPHIC CHARACTERISTICS RELATED TO QUALITY OF LIFE IN PATIENTS WITH PULMONARY TUBERCULOSIS IN BAGHDAD, IRAQ

Dujaili JA<sup>1</sup>, Syed Sulaiman SA<sup>1</sup>, Hassali MA<sup>2</sup>, Blebil AQ<sup>1</sup>, Awaisu A<sup>3</sup>

<sup>1</sup>Universiti Sains Malaysia, Minden, Malaysia, <sup>2</sup>Universiti Sains Malaysia, Penang, Malaysia,

<sup>3</sup>Qatar University, Doha, Qatar

**OBJECTIVES:** To assess the ability of the socio-demographic characteristics to predict health related quality of life (HRQL) of pulmonary tuberculosis (PTB) patients. **METHODS:** The study was conducted between September 1<sup>st</sup> 2012 and July 31<sup>st</sup> 2013, among consecutive PTB patients treated at Thoracic and Respiratory Disease Specialist Centre in Baghdad, Iraq. Functional Assessment of Chronic Illness Therapy-Tuberculosis (FACIT-TB); a TB-specific HRQL instrument, along with a structured questionnaire to collect data on socio-demographic characteristics were administered. Standard multiple regression analysis was used to assess the ability of the socio-demographic characteristics (age, marital status, education status, household size, breadwinner, financial status and smoking status) to predict HRQL of PTB patients as measured by FACIT-TB total score. **RESULTS:** Three hundred and five subjects were recruited over a period of 11 months. Participants ranged in age from 18 to 91 years, 64.6% of them were male and 28.2% were illiterate. Furthermore, 50.8% of the patients in the sample were the major breadwinners for their families. The variables in the model explained 22.9% of the variance in the FACIT-TB total score,  $F(7,286) = 12.14$ ,  $P < 0.001$ . Among the seven variables, education status, being the breadwinner, financial status, and smoking showed a significant bivariate relationship with the FACIT-TB total score. Correlations between these seven variables precluded the condition of

high co-variability, when  $r \geq 0.7$ , for regression analysis. The results of simple linear regression indicated that education status accounted for the greatest variance of the FACIT-TB total score, when the variance explained by all other variables in the model is controlled for (Beta = 0.325,  $P < 0.001$ ), followed by financial status and smoking status. **CONCLUSIONS:** Our results confirmed that poor educational and financial statuses as well as being smokers are independent determinant of poor HRQL of PTB patients in Iraq.

# PIN88 HEALTH RELATED QUALITY OF LIFE OF PEOPLE LIVING WITH HIV/AIDS ATTENDING THE ANTI-RETROVIRAL CLINIC IN THE UNIVERSITY OF BENIN TEACHING HOSPITAL, BENIN CITY

Odu GO<sup>1</sup>, Adeleye OA<sup>2</sup>, Olumese CO<sup>3</sup>

<sup>1</sup>University of Benin Teaching Hospital (UBTH), edo state, Nigeria, <sup>2</sup>University of Benin (UNIBEN),

edo state, Nigeria, <sup>3</sup>University of Benin Teaching Hospital, Benin City, Nigeria

**OBJECTIVES:** 1) To assess the overall Quality Of Life (QOL) of people living with HIV/AIDS (PLWHA); 2) To compare the QOL in the six domains of health; and 3) To determine any association between age, gender, educational level and QOL. **METHODS:** The study design is a descriptive cross sectional survey and the study population included all PLWHA who have enrolled into the Anti-Retroviral Therapy pharmacy of the University of Benin Teaching Hospital and were currently receiving their Highly Active Antiretroviral Therapy (HAART) for a period of at least six months. A trained interviewer administered a questionnaire that collects data on socio-demographics, clinicals and the items of World Health Organization Quality Of Life (WHOQOL) HIV-bref from each participant. Means, standard deviations, and statistical tests for differences were performed. **RESULTS:** A total of 360 respondents were surveyed. The mean age of the group was 38.58 years. 262 (72.8%) of respondents were females. The overall QOL of respondents was good with a mean score of (3.8 ± 0.81). The QOL mean score were highest for the spirituality/religion/personal belief domain (16.03 ± 0.97) and lowest for the social relationships domain (11.38 ± 1.01). The age of the respondents showed statistically significant differences ( $P < 0.05$ ) in all domains of QOL except in the level of independence domain. Respondents in all the age groups had poor QOL in the social relationships domain. Females had statistically significant higher QOL mean scores in the physical, psychological and spirituality/religion/personal beliefs domains ( $P < 0.05$ ) compared to males. The educational level of respondents showed statistically significant differences ( $P < 0.05$ ) in physical, psychological, social relationships and spirituality/religion/personal beliefs domains. Respondents with Tertiary education had higher QOL mean scores in the six domains of health. **CONCLUSIONS:** The study revealed good overall QOL among respondents. The mean QOL scores were highest in the spirituality/religion/personal beliefs domain and lowest in the social relationships.

# PIN89 THE ASSESSMENT OF PATIENTS' HEALTH RELATED QUALITY OF LIFE DURING THE COURSE OF TUBERCULOSIS TREATMENT IN BAGHDAD, IRAQ

Dujaili JA<sup>1</sup>, Syed Sulaiman SA<sup>1</sup>, Hassali MA<sup>2</sup>, Blebil AQ<sup>1</sup>, Awaisu A<sup>3</sup>

<sup>1</sup>Universiti Sains Malaysia, Minden, Malaysia, <sup>2</sup>Universiti Sains Malaysia, Penang, Malaysia,

<sup>3</sup>Qatar University, Doha, Qatar

**OBJECTIVES:** Quality of life (QoL) has become an accepted outcome measure in clinical research and advances have been made in assessing the impact of many diseases on QoL. The current study aimed to assess health related quality of life (HRQL) of subjects treated for active pulmonary tuberculosis (PTB) during the course of tuberculosis (TB) treatment. **METHODS:** Consecutive PTB patients treated at Thoracic and Respiratory Disease Specialist Centre in Baghdad, Iraq were administered a validated TB-specific instrument. The Functional Assessment of Chronic Illness Therapy-Tuberculosis (FACIT-TB) total score and its subscales score at onset of treatment, after the intensive phase, and after completion of TB treatment were compared. **RESULTS:** A total of 136 PTB patients were included in the analysis. After 2 months, physical well-being (PWB), functional well-being (FWB), and FACIT-TB total scores were significantly increased ( $P < 0.01$ ). However, there were no statistical significant differences in social and economic well-being (SEWB), emotional well-being/living with TB (EWB/TB), and spiritual well-being (SpWB) subscales score. Furthermore, a significant improvement was observed in overall HRQL as indicated by FACIT-TB total score and all subscales except SEWB and SpWB at completion of TB treatment. **CONCLUSIONS:** The gradual increase in PWB, FWB and EWB/TB subscale scores over the course of TB treatment indicate the positive effect of medical therapy on patients' QoL. However, interventions to offset social distress and dysfunction are important. Therefore individual's perception toward this dimension of QoL should be addressed in future research.

## INFECTION – Health Care Use & Policy Studies

### PIN90

# A MODEL OF CLOSTRIDIUM DIFFICILE INFECTION: DYNAMIC TRANSMISSION BETWEEN HOSPITALS, LONG-TERM CARE FACILITIES AND COMMUNITIES

Zowall H, Brewer C, Deutsch A

Zowall Consulting Inc., Westmount, QC, Canada

**OBJECTIVES:** The transmission of *C difficile* infection (CDI) has recently changed, resulting in a five-fold increase in the incidence in the general population and an eight-fold increase among the elderly. We developed a simulation model to examine the dynamic relationship between three major subpopulations of CDI transmission: hospitals, long-term care facilities (LTCF), and communities, to evaluate treatment effectiveness and costs. **METHODS:** A stochastic agent-tracking meta-population network model of CDI transmission has been developed. A framework for contagion dynamics between the three subpopulations (hospitals, LTCF and communities) was employed. We identified eight health states: susceptible, gastrointestinal exposure, colonized, diseased, clinically resolved colonized, relapsed, cleared, and deceased. Key parameters include: age-specific incidence rates, disease severity, hospital LOS,

treatment effectiveness, recurrence rates, mortality rates, and costs. **RESULTS:** In the general population 5%–20% of adults are estimated to be asymptomatic carriers of CDI but up to 80% of the elderly in LTCF are colonized. Over 50% of cases are associated with hospitals and LTCFs. Growing number of cases have onset in the community. 9% of patients over 65 experience severe episodes compared to 4% for those below 65. Mortality rates for elderly are much higher. Patients over 65 experience almost twice the recurrence rate (38%), compared with younger populations (18%–22%). The rates for a second recurrence are 38% for those 65+ versus 24% below 65. The probability of recurrent CDI increases with the number of recurrences experienced. Recurrences were associated with major increases in hospital LOS and in costs. **CONCLUSIONS:** Our age-specific model allows to project and to quantify the impact of a CDI outbreak in terms of clinical burden and costs. Using a scenario-based approach, comparisons of current treatments with the novel approach of duodenal infusion (fecal transplant) are carried out.

#### PIN91

##### TWO-DOSE INFLUENZA VACCINATION COVERAGE AMONG UNITED STATES CHILDREN, 2008-2011

Villacorta R

University of Southern California, Los Angeles, CA, USA

**BACKGROUND:** Children 6 months through 18 years of age are consistently identified as a high-risk population for influenza infections. Since 2007, the Advisory Committee on Immunization Practices (ACIP) emphasized children aged 6 months to <9 years receive two doses of influenza vaccine in a season. Poor compliance with this two-dose regimen has been described in recent years. However, since ACIP's two-dose recommendation in 2007, predictors of two-dose compliance have not been assessed using population-based data. **OBJECTIVES:** This study analyzed data from influenza seasons 2008-2011 to examine two-dose compliance for children aged 19-35 months. This analysis tests for significant demographic and socioeconomic differences in one- and two-dose influenza vaccinations. **METHODS:** Seasonal influenza vaccinations of children were estimated from the National Immunization Survey (NIS). The analysis results were nationally representative by weighting the study population according to survey weights and cluster variables. Primary outcome measures were at least one dose and two doses of influenza vaccination during September 1 through December 31 of the season. For each season, the proportion of children with partial and full influenza vaccinations were calculated. Multivariate regressions modeled the effect of multiple NIS factors (i.e., age, race, gender) on influenza vaccination. **RESULTS:** For all four seasons, adjusted one-dose influenza vaccination was significantly lower among children 24-35 months compared to children 19-23 months (ranging from 7.8-44.5%,  $p < 0.05$ ). Furthermore, one- and two-dose influenza vaccination was lowest among children living below the poverty level compared to children living above the poverty level (ranging from 9.4-53.7%,  $p < 0.05$ ). **CONCLUSIONS:** Policies to improve one- and two-dose influenza vaccination rates should target children living below the poverty level. Efforts to improve one-dose vaccination rates among older infant children should continue. Further studies are needed to determine the reasons for initiating influenza vaccinations among children less than 24 months of age.

#### PIN92

##### UNWARRANTED USE OF BROAD-SPECTRUM ANTIBIOTICS

Low M, Balicer RD, Bitterman H, Raz R, Lieberman N

Clalit Health Services, Tel Aviv, Israel

**OBJECTIVES:** This study aimed to evaluate if high antibiotic consumption is explained by inappropriate prescribing, given current practice guidelines. This is assessed through measuring the proportion of Upper Respiratory Tract Infection (URTI) treated by GPs with Co-amoxiclav, and Urinary Tract Infection (UTI) treated with fluoroquinolones, comparing across population subgroups for differential treatment patterns. **METHODS:** This cohort study included records of all Clalit members visiting physicians from 4300 clinical practices during 2011. Rule-based algorithms were used to classify multiple primary care visits into discrete URTI and UTI events and link these with Ab prescriptions and dispensing. Infectious events and antibiotic prescription rates were calculated. Differences in distributions across districts and population subgroups were then tested with Chi-square analysis; for prescribing ratios for UTI the ratio for prescribing fluoroquinolones vs. Nitrofurantoin (narrow-range Ab of choice) were calculated. **RESULTS:** 6.5 million visits for infectious diagnoses were registered for all 4 million enrollees. Almost 75% of the Co-amoxiclav dispensed was used for treatment of URTI, with 6% of URTI events treated with Co-amoxiclav. Over 75% of fluoroquinolones dispensed were used to treat UTI, with 23% of UTI events treated with fluoroquinolones. Variability between districts in the use of Co-amoxiclav for URTI ranged between 12%-23% in adults and 5%-21% in children. Twenty percent of physicians were co-amoxiclav "prescribers" with high rates of URTI events treated with co-amoxiclav (10%-38%). Treatment of UTI events with Quinolones varied considerably between 19%-52%. The proportion of Quinolones/Nitrofurantoin prescribed ranged between 1.4 (1.3-1.5) to 6.2 (5.5-6.8) in each district. **CONCLUSIONS:** Rates of utilizing broad-spectrum antibiotics in the community are higher than expected and show wide variability across country districts and between physicians. This suggests the need for introducing this as a quality measure and implementing targeted interventions to reduce inappropriate antibiotic use.

#### PIN94

##### EVALUATION OF INJECTABLE FOSFOMYCIN USE IN A MEDICAL CENTER

Cheng KI

Taipei Medical University – Wan Fang Hospital, Taipei, Taiwan

**OBJECTIVES:** To evaluate efficacy, safety (concerning hypernatremia), and usage of UFO® in a medical center. **METHODS:** A retrospective medical record review was conducted for patients who is treated with UFO® in Wan-fang hospital during 2012/5/1 to 7/8. Patients with cancers were excluded. Patients with suspected or diagnosed infections and more than one dose of UFO® were included. For hypernatremia analysis, only included patients with serum sodium level and no hypernatremia events prior UFO use. Microsoft excels and student t-test were utilized

for analyzing data and p-values. **RESULTS:** Thirty-eight patients were included and the common infection types are pneumonia (N=13); UTI (N=12); cellulitis (N=9) and sepsis (N=9). The common pathogens are *Staphylococci* (19%) and *Pseudomona* species (21%). Twenty-one percent of cases used UFO® as empirical or first-line therapy. Combination therapies with cephalosporins (26%) or penicillins (24%) were more frequent. In cephalosporins combination therapy, the most combined antibiotics are 3th cephalosporins (75%). In penicillins combination therapy, the most combined antibiotics is oxacillin (40%). Mean treatment duration of UFO is 9.4 days. There were 71% cases using common dose of UFO®, 8-12 g/day, and 29% using low dose, 4-6 g/day. In patients with UFO®, 74% had negative outcomes (defined as patient died, hypernatremia events and changed to other antibiotics) and 26% had positive outcomes (defined as patients discharged, disease improved and no recurrent fever). Most patients developed hypernatremia (serum sodium level > 145 mEq/L) after using UFO® for 4-6 days; patients with creatinine clearance above 50 ml/min did not develop hypernatremia. **CONCLUSIONS:** The serum sodium level didn't increase significantly until day 4-6 after starting UFO®. For patients with higher baseline serum sodium level and renal dysfunction, sodium level should be monitored closely while using UFO®. Using UFO® as adjunct for first line or empiric treatments is lack of evidence. Further antibiotic prescribing regulations should be implemented concerning prescribing UFO®.

#### PIN95

##### ANTIMALARIAL DRUGS USE PATTERN IN RETAIL OUTLETS IN ENUGU URBAN SOUTH EAST NIGERIA; IMPLICATION FOR MALARIA TREATMENT POLICY

Ezenduka CC, Ogbonna BO, Esimone CO

Nnamdi Azikiwe University, Awka, Nigeria

**OBJECTIVES:** Drugs retail outlets constitute a major source of malaria treatment in developing countries requiring regular and accurate information for enhancing strategies for improving the use of Artemisinin-based Combination Therapy (ACT). The study analyzed the demand and sales pattern of antimalarial drugs in private retail outlets to assess the current state of compliance to policy. **METHODS:** A prospective cross-sectional survey of randomly selected drugs retail outlets in Enugu urban, south east Nigeria, was conducted between May and August, 2013, to determine the types, range, prices and sales pattern of antimalarial drugs as well as concomitant medications, from pharmacies and patent medicine outlets. Data was collected and analysed for antimalarial drugs demanded for and sold by self-medication, treatment by retail outlets and prescription from hospitals. **RESULTS:** With a total of 1,321 dispensed antimalarial drugs, ACTs accounted for 72.7% while monotherapy was 27.3%. AMFm drugs contributed 32.7% (n = 314) of ACTs. 46.5% (614) of the drugs were dispensed from self-treatment by patients. Treatment by the retail outlets accounted for 35.8% (n = 473) while 17.7% of the drugs were dispensed from hospital prescriptions. The median cost of the ACTs, at \$3.23 is about three times the median cost of monotherapy (\$0.97). Total cost of treatment, including concomitant medications averaged \$3.34 (±\$1.90). The AL brand was the most used ACT, at 69.3% (n = 666). Self-medication accounted for the highest number of monotherapy at 82%. **CONCLUSIONS:** The use of ACTs as predominant antimalarial drugs of choice has become widespread in the retail outlets, with significant contributions from AMFm drugs. This portends positive implications on the implementation of antimalarial drugs policy. However costs of policy recommended drugs remain higher than intended and the use of monotherapy particularly through self-medication is significant suggesting additional measures to directly target consumers for improved use of antimalarial drugs.

#### PIN96

##### REAL WORLD DRUG UTILIZATION OF HIV THERAPIES IN CANADA

Rocchi A<sup>1</sup>, Cui Q<sup>2</sup>, Ismail A<sup>3</sup>, de los Rios P<sup>4</sup>

<sup>1</sup>Axia Research Inc., Burlington, ON, Canada, <sup>2</sup>GlaxoSmithKline, Mississauga, ON, Canada,

<sup>3</sup>GlaxoSmithKline, Research Triangle Park, NC, USA, <sup>4</sup>ViiV Healthcare, Laval, QC, Canada

**OBJECTIVES:** To describe current utilization of HIV drugs in Canada. **METHODS:** Longitudinal pharmacy retail data were obtained from most Canadian provinces. Eligible patients received their first HIV drug prescription during the selection period, and consistently filled subsequent prescriptions at the same pharmacy. Selection periods included an early cohort (initiating therapy January 2008 to July 2009) and a late cohort (initiating therapy August 2010 to February 2012). The observation period was 43 months for the early cohort and 12 months for the late cohort. **RESULTS:** 905 patients in the early cohort and 1,411 patients in the late cohort were analysed. Single-tablet regimens were the initial therapy for 32% of patients (early cohort) and 33% (late cohort). The most commonly used regimen was a backbone + protease inhibitor (PI): 45% of total days on therapy (DOT) for early cohort, 39% for late. Darunavir was increasingly chosen as the initial PI (3% patients for early cohort, 16% for late). Backbone plus integrase inhibitor (II) increased from 2% DOT (early cohort) to 11% in the late cohort. The majority of II patients were treatment-naïve (71%) in the late cohort, despite funding limitation to treatment-experienced patients in most jurisdictions. After 3 years of follow-up in the early cohort, 45% were still on their first therapy. For early-cohort patients who switched to a second therapy, 33% did so within 3 months. Subsequent lines of therapy phased in more gradually in both cohorts. Darunavir and II use increased in later lines of therapy for both cohorts, but particularly for the late cohort. **CONCLUSIONS:** This research documented changing patterns for HIV drug use in Canada, with increasing use of darunavir and II over time (irrespective of funding restrictions) and frequent early therapy switches suggestive of tolerability issues.

#### PIN97

##### PHARMACIST VACCINATION PROGRAMS FOR COMMON INFECTIOUS DISEASES: A SYSTEMATIC REVIEW OF THE LITERATURE ON THIS EMERGING MODEL OF CARE

Cannon-Dang E<sup>1</sup>, Schafer JJ<sup>1</sup>, Steele D<sup>1</sup>, Pizzi LT<sup>2</sup>

<sup>1</sup>Jefferson School of Pharmacy, Philadelphia, PA, USA, <sup>2</sup>Thomas Jefferson University, Philadelphia, PA, USA